Technical Programme – Wednesday, 22 September 2010

Data Workshop

Chair: C. Piovey and N. Van Vonno

DW-1 Single Event Effect Test Results for Candidate Spacecraft Electronics.
Qingkui Yu, Min Tang, Dayu Zhang, Meng Meng, Ying Zhang, Hongwei Zhang, Xiangkun Qi, Pengwei Li, Changning Huang, Gang Guo : China Academy of Space Technology
Jie Liu : Institute of Modern Physics

Heavy ion tests were performed to study the Single Event Effect (SEE) on emerging technology devices, including CMOS image sensor, ferroelectric memory, signal processor and microprocessor. Characteristic data of Single Event Upset (SEU) and Single Event Latch-up.

DW-2 Total Dose Testing of the ISL70001SRH Hardened Point of Load Regulator.
Nick van Vonno, Larry Pearce, Jim Gill, Bill Satterfield, Eric Thomson, Alan Williams, Philip Chesley : Intersil

We report the results of total dose testing at low and high dose rate of the ISL70001RH hardened POL regulator and discuss part design, performance and applications. The part is implemented in submicron BiCMOS.

DW-3 Low Dose Rate Testing of Legacy Intersil Products.
Nick van Vonno, Larry Pearce, Eric Thomson, Alan Williams, Philip Chesley, Jim Gill : Intersil

We report the results of low and high dose rate ^{60}Co testing of a total of eleven Intersil parts, including dielectrically isolated and junction isolated types. The MIL-STD-883 procedure for ELDRS sensitivity determination was used.

DW-4 Compendium of TID and SEE Test Results for Various Candidate Spacecraft Electronics.
Florence Malou, David Dangla, Cesar Boatella-Polo : CNES
Alexandre Rousset : TRAD
Jean-François Pascal : HIREX

We present data on the vulnerability of various candidate spacecraft electronics to total ionizing dose and heavy ion induced single event effects. Most of the tested devices are commercial integrated circuits, including Analog-to-Digital Converters, Memories p

DW-5 Proton Radiation Test Results of Candidate Spacecraft Electronic devices for a Low-Earth Orbit Micro-satellite.
Eric Gloutnay : CSA

This paper reports the results of Single Event Effect (SEE) testing of commercial microelectronic devices after exposure to protons. These devices were being evaluated for a microsatellite application. Test protocol, results and analysis are discussed.

DW-6 TID Characterization of Rad-Hardened Bipolar Transistors Prototypes.
Geraldine Chaumont, Andre Uguen, Aissa Nehdi, Patrick Briand : STMicroelectronics

Bipolar transistors prototypes have been TID characterized at two different low dose rates until 100krad(Si) and 300krad(Si) respectively. This paper presents the TID data at both dose rates and compares the results with standard products.

DW-7 ELDRS: Dynamic vs. Static dose rate testing.
Ana Keating, Ali Zadeh, Michele Muschitiello, Bob Nickson : ESA

Dynamic and static TID irradiation tests on bipolar based ICs were performed to investigate the ELDRS Radiation Hardness Assurance processes.

DW-8 Characterization of CMOS Devices for a Very High Dose Mission.
Richard Harris, Steven McClure, Bernard Rax, Aaron Kenna, Dennis Thornbourn, Karla Clark, Tsun-Yee Yan : NASA/JPL

CMOS devices have been evaluated for doses up to 1 Mrad. All of the parts evaluated to date show functional, extreme parametric, or mild parametric failure long before the 1 Mrad dose is reached.

DW-9 ATMEL ATF280 Radiation Hardened SRAM Based reprogrammable FPGA.
Guy Mantelet, Michel Briet, Guy Rouxel, Said Hachad : ATMEL

The paper presents the ATMEL rad-hard SRAM based reprogrammable FPGA design choices as well as the Single Event Effect test results to illustrate the capability of this product to be used in space.

DW-10 SEE Test Results of National Semiconductor’s LVDS Driver and Receiver Pair DS90C031 and DS90C032.
Kirby Kruckmeyer, Tom Santiago , Robert Eddy : National Semiconductor

Updated Single Event Latchup, Functional Interrupt and Upset data are presented for National Semiconductor’s Low Voltage Differential Signal Driver and Receiver pair, DS90C031WxRQMLV and DS90C032WxLQMLV.

DW-11 Proton and Heavy Ion induced SEL in a Xilinx XC95108 CPLD.
Thijs Wijnands, Quentin King, Benjamin Todd : CERN
Francois-Xavier Guerre : HIREX

A study of Single Event Latch Ups (SELs) in a XC95144 (CPLD) device is presented using protons at 60 MeV and 230 MeV and low and high penetrating ions with LETs ranging from 3 to 34 MeVcm^2/mg.

DW-12 Space degradation of solar cells at low temperatures.
Samira Makham, GuoCai Sun, Jacques Bourgoin : GESEC R&D

The technique used to monitor the electrical characteristics of solar cells versus irradiation fluence in the range 80 – 300 K is described and then illustrated by results obtained for GaAs, GaInP and triple junction GaInP/GaAs/Ge cells.

DW-13 Results of Single-Event Latchup Measurements Conducted by the Jet Propulsion Laboratory.

Farokh Irom, Tetsuo Miyahira : NASA/JPL

This paper reports recent single-event latchup (SEL) results for a variety of microelectronic devices that include OpAmp, Voltage Reference, Motor Controller, Switch Mode Controller, Resolver-to-Digital Converter and Analog-to-Digital Converter.

DW-14 Radiation effects in the PowerPC7448 Microprocessor.

Damien Lambert, Xavier Vega : EADS
Dan Alexandrescu, : iRoC Technologies
Bruno Azaïs : DGA

Total Ionizing Dose and upset susceptibility are measured for the PowerPC MPC7448 microprocessor. SEE cross-sections for protons and neutrons have been tested for registers and data caches. Main characteristics of susceptibility are given.